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Original Article

A Comprehensive Case Management Program To Improve Palliative Care

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Abstract

Objective: The objective of this study was to evaluate the impact of comprehensive case management (CM) and expanded insurance benefits on use of hospice and acute health care services among enrollees in a national health plan.
Study Design: Retrospective cohort design with three intervention groups, each matched to a historical control group.
Methods: Intervention groups were health plan enrollees who died after 2004: 3491 commercial enrollees with CM; 387 commercial enrollees with CM and expanded hospice benefits; and 447 Medicare enrollees with CM. Control groups consisted of enrollees who died in 2004 prior to the start of the palliative care CM program. The main outcomes measured were the proportion using hospice, mean number of hospice days, and number of inpatient days measured through medical claims.
Results: Hospice use increased for all groups receiving CM compared to the respective control groups: from 30.8% to 71.7% ($p < 0.0001$) for commercial members with CM and from 27.9% to 69.8% ($p < 0.0001$) for Commercial members with CM and enhanced hospice benefits. Mean hospice days increased from 15.9 to 28.6 days ($p < .0001$) and from 21.4 to 36.7 days ($p < 0.0001$) for these groups, respectively. Inpatient stays were lower for all groups receiving CM services compared to their respective control groups.
Conclusions: Comprehensive health plan CM and more liberal hospice benefit design may help to break down barriers to hospice use; benefits might be liberalized within the context of such case management programs without adverse impact on total costs.

Introduction

Hospice care helps to meet the needs of patients with advanced illness by providing effective pain and symptom management and support for the emotional and spiritual needs of patients and their caregivers. Such care allows patients to achieve a sense of control over dying, many of whom would prefer to die at home. Hospice utilization among Medicare decedents increased dramatically in the last decade, to approximately 40% in 2005.[1] However, the current rate is considered less than ideal to fully meet the needs of those with advanced illness, and there is substantial variation in the use of hospice by age, race, diagnosis and geographic location.[2–5] Many individuals enter hospice shortly before death, substantially limiting the benefit they might obtain from hospice services. In 2006, the median length of stay in hospice was 20.6 days, down from 26.0 days in 2005, and little changed from the 2001 rate of 20.5 days.[6] Among Medicare decedents, the median length of stay was 15 days in 2005.[1]

Barriers to election of hospice care include preferences for aggressive curative treatment among patients, families, and physicians, physician's discomfort and difficulty in initiating conversations about advanced illness choices, Medicare regulations requiring the patient's physician to certify that the patient has a life expectancy of 6 months or less, limits on hospice benefits, and the need to forego curative medical treatment in order to qualify for hospice.[7,8]

In 2004, a national health plan launched a comprehensive case management (CM) program targeted specifically to patients with advanced illness and their families. The health

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plan also piloted a benefit design change among 13 large employers that liberalized hospice and respite benefits for seriously ill patients and families. The purpose of this article is to describe the impacts of the case management program and the liberalization of benefits on use of hospice and acute health care services in commercially insured and Medicare Advantage populations.

Methods

Program description

A comprehensive case management program termed the "Compassionate Care Program" was launched at the end of 2004 and included comprehensive case management services provided by health plan nurse case managers who received extensive training in palliative care. This specialized case management program supplemented the traditional case management services available to all health plan members. Members were identified as candidates for the program through the health plan's process of concurrent review of inpatient admissions, physician referral, self-referral, and monthly use of a proprietary predictive model examining medical and pharmacy claims to identify individuals whose claims history suggested a terminal illness. Case management services were available to all eligible members and few individuals declined these services. Physicians in the health plan network were notified of the program at the time it was implemented via an article in the physician newsletter sent out by the health plan.

Case managers reached out by telephone to identified members and conducted a comprehensive assessment of their needs and developed individual plans of care that addressed the members' needs and preferences. The number and frequency of contacts with the member was established with the member/caregiver during the initial outreach. The case manager assisted the member and family by addressing issues such as the need for education of the disease process for member and family/caregiver, understanding of advanced directives and assistance with obtaining these documents, understanding their preferences for care, identifying community resources for member and caregiver support, social work support, pain control, medication management, and home or respite care. The case manager worked with the member's physician to coordinate care and with the hospice agency if hospice was in place.

The case manager handled an average caseload of 40–45 health plan members, all in various stages of need for support. Members with advanced illness made up a small percentage of that caseload at any given time. The internal cost for a nurse case manager to manage a member with advanced illness was approximately $400.

In January 2005, a pilot program was launched for 13 large employers whereby, in addition to the provision for case management support, insurance benefits for hospice and respite were expanded. The expansion included extending the durational definition of terminal illness from 6 months to 12 months; continued receipt of curative treatment while also receiving hospice services; removal of length of stay for inpatient hospice and maximum dollar limits for outpatient hospice; provision of 15 days per year of respite benefits for family members; and availability of bereavement services through employer assistance programs.

Study design and population

The study was a retrospective cohort design using matched historical control groups. Data for the analysis came from the health plan's eligibility, claims and utilization management systems. Members who died during 2005, 2006, and the first quarter of 2007 were identified through the health plan case management database.

These members comprised three groups:

1. Case Management (CM) Group ($n = 3491$): Commercially insured members with usual hospice benefits who received comprehensive case management (CM) services.
2. Enhanced Benefits CM Group ($n = 387$): Commercially insured members whose benefits were provided by one of the 13 large employers participating in the pilot program for which hospice and respite benefits were liberalized. These members also received the comprehensive CM services.
3. Medicare CM Group ($n = 447$): Medicare Advantage members with Centers for Medicare & Medicaid Services (CMS)-defined hospice benefits who received comprehensive CM services.

Control groups

Historical control groups were created for each of the groups above. Health plan members who died in 2004 were identified from the Social Security Death Index files by matching on Social Security Number and two of the following: date of birth, gender and full name.[9] Control group members had been eligible for the health plan's usual case management services in place prior to the specialzed training program in palliative care. Each member receiving CM was matched to a control group member on age, severity of illness score, presence of health plan pharmacy benefits, and diagnosis using information available in the health plan's claims and eligibility systems. Severity of illness of each member was quantified using the Ingenix Episode Risk Group™ (ERG™) Score software.[10] This score was derived from weights assigned from a normative insurance claims database for each diagnosis group found in medical episodes constructed from medical and pharmacy claims data.

Study period

The date of enrollment in the CM program was determined for each member and the number of days between this index date and the person's death was calculated. The number of days prior to death was used as the observation period for each matched pair.

Primary outcome measures

The primary outcome measures were rates of hospice use and mean number of days in hospice, which were expected to be higher in the groups receiving case management and expanded hospice benefits compared to the control groups. Hospice use measures were calculated from health plan claims data for the commercial members and included the proportion of members using hospice in both inpatient and outpatient settings and the length of service in hospice. For the Medicare CM Group for whom hospice claims were paid directly by CMS, hospice use was calculated based on an

indicator flag on the CMS Monthly Member Eligibility Files. The number of days in hospice was not available from this source. The flag indicating hospice in the health plan utilization management system was not available for the Medicare control group, thus, the hospice use rate was not calculated for this group.

Secondary outcome measures

The acute care utilization measures were calculated from health plan claims data, and included the proportion of members with acute care hospital admissions, the rate of acute hospital inpatient days per 1000 members, proportion of members with an intensive care unit (ICU) stay during an acute hospitalization, proportion of members with emergency visits, the rate of emergency department visits per 1000 members, and rate of primary care and specialist vists per member. No directional hypotheses were made for these measures. Measures expressed as days per 1000 members were calculated as the number of days divided by the number of members in the CM Group multiplied by 1000.

Statistical analysis

Generalized linear models were used to compare outcome variables between groups with a subject effect variable to adjust for the paired nature of the data. McNemar's test was used for comparing proportions. A generalized linear model assuming a two parameter Poisson probability distribution was employed for comparing rates represented as counts per thousand. The two-parameter Poisson was chosen for the response probability distribution so that the scale parameter could model the overdispersion in the data. Kaplan-Meier methods were used to estimate the number of days between hospice enrollment and death, and group differences were tested using a two-sided log rank test. All models included a variable for the geographical region where the member resided to adjust for regional differences in hospice use. Results of statistical tests yielding p values < 0.05 were considered statistically significant. All analyses were done using SAS v.9.0 (SAS Institute, Cary, NC).

Results

Table 1 shows sociodemographic characteristics of each CM group compared to its control group. There were no statistically significant differences on the variables used in the matching process. Table 2 lists the top 15 diagnoses for each group. Within each cohort, the CM and Control groups varied in the geographic distribution of members; therefore, geographic region was used as an adjustor in the analyses of outcomes. Table 3 presents the use of health care services by the Enhanced Benefits CM Group, the CM Group and the Medicare CM Groups compared to their respective control groups, adjusted for differences in geographic region. The average number of days in the CM program was 42.3 days (Enhanced Benefits CM Group), 39.6 days (CM), and 56.7 days (Medicare CM).

For each group receiving CM, the percentage of members using hospice more than doubled compared to its control group (Enhanced Benefits CM 69.8% versus 27.9%, $p < 0.0001$; CM 71.7% versus 30.8%, $p < 0.0001$). The mean number of days with hospice increased from 21.4 days to 36.7 days ($p < 0.0001$) for the Enhanced Benefits CM group, and from

Table 1. Characteristics of Case Management (CM) Groups

	Enhanced Benefits CM			*CM*			*Medicare CM*		
n	*Study group* 387	*Control group* 387	p *value*	*Study group* 3491	*Control group* 3491	p *value*	*Study group* 447	*Control group* 447	p *value*
Matching variables									
Mean age	59.47	59.04	0.45	56.52	56.87	0.1266	77.14	77.36	0.6588
Comorbidity risk score[a]	18.19	17.76	0.5582	19.79	19.65	0.5824	24.83	24.17	0.4181
Health plan pharmacy Benefit	18.1%	18.1%	1.00	62.4%	62.4%	1.00	100%	100%	1.00
% with cancer as terminal condition	74.4%	74.4%	1.00	80.7%	80.7%	1.00	57.5%	57.5%	1.00
Descriptive variables									
% Female	61.5%	55.8%	0.1086	49.7%	48.1%	0.1880	44.5%	44.5%	1.00
% PPO	96.6%	98.2%		65.1%	74.9%		0%	0%	
Health plan geographic Region									
Mid-Atlantic	9.8%	10.3%		20.3%	14.9%		47.9%	43.0%	
North Central	20.9%	22.0%		16.4%	16.6%		.2%	0%	
Northeast	4.1%	9.3%		12.7%	14.0%		48.5%	34.7%	
Southeast	9.8%	9.8%		24.7%	14.4%		.2%	0%	
Southwest	39.3%	19.4%		10.3%	12.1%		0%	0%	
West	8.3%	8.8%		9.8%	10.0%		3.1%	22.4%	
Unknown	7.8%	20.4%		5.7%	17.9%		0%	0%	

[a]Episode Risk Group™ Score.
PPO, preferred provider organization.

Table 2. Top Fifteen Conditions by Case Management Group

Enhanced case management		*Commercial case management*		*Medicare case management*	
Lung cancer	15.0%	Lung cancer	20.1%	Lung cancer	19.5%
Gastrointestinal cancer	10.6%	Gastrointestinal cancer	12.7%	Gastrointestinal cancer	9.6%
Colorectal cancer	9.0%	Breast cancer	9.2%	Congestive heart failure	6.7%
Neoplasms—other	7.2%	Neoplasms—other	7.9%	Neoplasms—Other	6.5%
Brain cancer	6.2%	Colorectal cancer	7.5%	COPD	6.0%
Breast cancer	6.2%	Gynecologic cancer	5.0%	Colorectal cancer	4.9%
Gynecologic cancer	5.2%	Brain cancer	3.8%	Breast cancer	3.4%
Neurologic disorders	3.9%	Hodgkin's lymphoma	2.2%	Prostate cancer	3.1%
Hodgkin's lymphoma	3.1%	Hematologic cancer	2.1%	Chronic renal failure	2.9%
COPD	2.6%	Hepatobiliary disorders	1.8%	Diabetes mellitus	2.9%
Hepatobiliary disorders	1.8%	Head and neck cancer	1.5%	Respiratory failure	2.9%
Head and neck cancer	1.6%	Prostate cancer	1.5%	Cerebrovascular disease	2.2%
Heart failure	1.3%	COPD	1.4%	Hematologic cancer	2.2%
Malignant melanoma	1.3%	Respiratory failure	1.3%	Pneumonia	1.6%
Sepsis	1.0%	Malignant melanoma	1.2%	Hypertension	1.6%

15.9 days to 28.6 days ($p < 0.0001$) for the CM group. The rate of use of hospice in the Medicare CM Group was 62.9%.

The percentages of members with an acute inpatient stay after program enrollment were reduced for the Enhanced Benefits CM Group (16.8% versus 40.3%, $p < 0.0001$), CM group (22.7% versus 42.9%, $p < 0.0001$), and Medicare CM group (30.0% versus 88.4%, $p < 0.0001$) compared to their respective control groups. The number of acute inpatient days was reduced for the Enhanced Benefits CM group (1549 versus 3986 days per thousand members, $p < 0.0001$), CM Group (2311 versus 3858 days per thousand members, $p < 0.0001$), and Medicare CM Group (2309 versus 15,217 per thousand members, $p < 0.0001$) compared to their respective control groups. The proportion of members with ICU stays during an acute inpatient admission was significantly lower for all of the groups receiving CM compared to their respective control groups, as was ICU days per thousand member (Enhanced Benefits CM Group 899 versus 2542, $p < 0.0001$, CM Group 1356 versus 2162, $p < 0.0001$, Medicare CM Group; 1189 versus 9840, $p < 0.0001$) compared to the control groups.

Table 3. Adjusted Utilization of Health Care Services[a]

	Enhanced Benefits CM[b] *Pilot Group*			*CM Group*			*Medicare CM Group*		
	Study group	*Control group*	p *value*	*Study group*	*Control group*	p *value*	*Study group*	*Control group*	p *value*
Average days in CM program	42.3			39.6			56.7		
Percent Using Hospice	69.8%	27.9%	<0.0001	71.7%	30.8%	<0.0001	62.9%	[c]	
Mean days from hospice claim and death	36.7	21.4	<0.0001	28.6	15.9	<0.0001	[c]	[c]	
Hospice inpatient days/1000	1,424.2	601.2	<0.0001	1,903.5	634.7	<0.0001	[c]	[c]	
Hospice outpatient days/1000	14,607.0	3,914.5	<0.0001	12,075.7	3,702.1	<0.0001	[c]	[c]	
Percent with acute inpatient stay	16.8%	40.3%	<0.0001	22.7%	42.9%	<0.0001	30.0%	88.4%	<0.0001
Average Length of Stay Inpatient	5.84	6.91	0.2759	6.39	5.90	0.0340	5.80	7.10	0.0157
Percent With Emergency Visit	9.8%	15.2%	0.0099	9.7%	14.4%	<0.0001	8.5%	32.9%	<0.0001
Percent With ICU Stay	9.6%	23.0%	<0.0001	11.7%	19.9%	<0.0001	14.8%	50.6%	<0.0001
Acute inpatient days/1000	1,549.4	3,986.4	<0.0001	2,310.6	3857.8	<0.0001	2,308.9	15,216.8	<0.0001
Emergency visits/1000	94.4	159.3	0.0008	136.1	197.2	<0.0001	92.7	436.8	<0.0001
ICU days/1000	898.8	2,541.6	<0.0001	1,355.8	2,161.7	<0.0001	1,188.9	9,839.5	<0.0001
Primary care physician visits per Member	0.53	1.00	0.0033	0.71	0.89	0.0012	0.69	0.78	0.5053
Specialist visits per Member	1.44	2.09	.0054	2.11	2.50	0.0001	1.91	3.01	<0.0001

[a]Adjusted for differences in geographical region.
[b]CM, Case Management.
[c]Not available.

As shown in Table 3, primary care physician visits were lower for the Commercial CM Groups compared to their control groups. Specialist visits were lower for all CM Groups compared to their control groups, including Medicare CM.

Discussion

While frequently providing curative acute care, the health care community too often neglects the needs of those with advanced illness: palliative care, pain relief and, perhaps most important, psychosocial support and presentation of realistic choices. Although hospice utilization has increased in recent years, it is still well below the level that well-informed patients and families might elect, and the average length of hospice service is often too short for patients and families to realize optimal benefits.[7,8]

Some interventions have proven useful in increasing hospice use. Casarett et al.[11] demonstrated that a simple intervention that involved communicating nursing home residents' goals, preferences and palliative care needs to physicians increased the percentage of residents who enrolled in hospice compared to the usual care group (25% versus 6%) with 42% fewer acute care admissions and 60% fewer days in hospital for the intervention group. On the other hand, the SUPPORT Study[12] found that specially trained nurses who communicated the wishes of patients and their families to physicians and nurses did not result in more effective pain management, nor reduce the use of intensive hospital resources. A recent review of 22 randomized controlled trials of specialized palliative care teams found inconclusive evidence of reducing acute care utilization and costs, in large part because of sample size issues and other methodological challenges.[13] One consistent finding, however, was better caregiver satisfaction for patients receiving palliative care.

Managed care organizations, with case management systems and processes that enable them to communicate directly with physicians and patients, are in a position to facilitate hospice use. Several studies have reported higher rates of use among managed care Medicare enrollees than among Medicare Fee-for-Service enrollees.[3,4,14] Virnig et al.[14] reported that, among all Medicare beneficiaries dying in 1996, 26.6% of managed care enrollees elected hospice compared to 17.0% of Fee-For-Service enrollees. McCarthy et al.[4] reported that 32.4% of managed care enrollees dying of cancer between 1988 and 1998 elected hospice, compared to 19.8% among Medicare Fee-For-Service patients. This pattern has persisted between 1998 and 2004—although hospice use rates have increased overall, hospice use rates among Medicare enrollees are still higher among managed care enrollees than Fee-For-Service enrollees (38% versus 30% in 2004).[15]

The results of the present analysis demonstrate the additional impacts that comprehensive case management within a health plan and more liberal hospice insurance benefit design may have on breaking down barriers to hospice use. Hospice use increased to about 70% among patients receiving these case management services, nearly doubling of the health plan's 2004 rate for commercially insured members. Acute care and critical care utilization was lower for members receiving the comprehensive case management services, even among members in a pilot group who were not required to forego curative and aggressive medical care as a condition of entering hospice care. Nurse case managers in the health plan had extensive prior experience communicating directly with patients, families and physicians, and coordinating care across the range of providers and settings with which a patient may interact. This comprehensive nature of case management, additional training relative to palliative care, along with the direct coordination of services, may be the critical ingredient for success, more effective than a system focused on facilitating communication with physicians. Because the intervention was embedded in the health plan's existing case management processes, the ongoing incremental cost of addressing the palliative care needs of members with advanced illness was not material (about $400 per case managed member).

We did not study the additional effect of the liberalized benefit on hospice use compared to case management alone. We note, however, that the rates of hospice election were similar among the two groups of commercially insured patients who received comprehensive case management, although the number of days in hospice was greater for the Enhanced Benefits CM Group (36.7 versus 28.6 days). The removal of hospice coverage limits and requirement to relinquish curative care may account in part for the earlier election of hospice in the Enhanced Benefits CM Group; however, differences in age and gender between these groups may also explain the earlier election.

Although average days of hospice service increased among the case management groups, there is still opportunity for additional improvement in these rates. Hospice lengths of stay were well below the benefit limits, even among the group with liberalized benefits. The removal of terminal limits alone may not be enough to overcome physician and individual attitudinal barriers.

There are a number of caveats associated with our findings. The patients studied did not represent all patients with advanced illness who died during the time period studied; rather they represented a cohort of individuals whose illness became known to the health plan's case management program through secondary identification mechanisms. Identification mechanisms based on concurrent review of inpatient cases, referrals, and claims-based predictive modeling algorithms are imperfect.

Furthermore, the patients in the study were compared to matched historical control groups of patients from 2004. It is possible that some portion of the increases in hospice use reflect national trends in greater hospice use. The number of patients served in hospice increased from 1.06 million in 2004 to 1.30 million in 2006, a 22.6% increase.[6] In contrast, the use of hospice among patients in this study more than doubled between 2004 and early 2007. It is also possible that there were differences in unmeasured characteristics such as preferences and attitudes between the groups influenced hospice election. While a prospective, randomized trial or use of concurrent non-randomized groups would have been preferable, for this health plan providing benefits nationally, such a design was not feasible.

The findings of the present study suggest that unmet needs of seriously ill patients for palliative care and symptom management may be addressed by more comprehensive and specialized case management and more liberal plan design. The findings suggest that liberalization of hospice benefits that permits continued curative treatment and removes limits on hospice benefits is a strategy that is financially feasible for

health plan sponsors, insurers and Medicare. The requirement that a physician certify that a patient is expected to die within 6 months may no longer be appropriate as many conditions may entail longer survivals. In summary, case management appears to represent a compelling opportunity to improve the quality of care for those with advanced illness, and hospice benefits might be liberalized within the context of such case management without adverse impact on total costs.

Author Disclosure Statement

At the time the study was conducted, all authors were employed by Aetna, the health plan that implemented the palliative care program. No competing financial interests exist.

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